



Frequently Asked Questions *Implementing the State's BadgerNet Fiber Grant*

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(<http://dpi.wi.gov/pld/arrabbfunding.html>)



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Background:

The 2009 American Recovery and Reinvestment Act (ARRA) included \$7.2 billion to help build the nation's broadband infrastructure and improve broadband access to community anchor institutions—including K-12 schools and libraries. The funding is being awarded via a competitive grant process administered by the federal Commerce Department's National Telecommunications and Information Administration (NTIA) and the Agriculture Department's Rural Utilities Service (RUS).

In August 2009 the state Department of Administration (DOA) submitted a \$28.7 million grant under the NTIA's Broadband Technology Opportunities Program (BTOP). The grant proposed to bring fiber connectivity to 467 schools and libraries that are on the state's [BadgerNet Converged Network](#) (BCN) but still have limited, copper circuits. After a lengthy grant review process, in February the NTIA announced that the grant had been awarded. This FAQ addresses the questions being asked now that the BCN fiber project is moving forward. Because this project is in the early stages of implementation some answers below will be subject to further clarification as more information becomes available. The Department of Public Instruction's (DPI) broadband website referenced above also has an FAQ from August 2009 which includes more background on the grant.

Note: As of March 15, the Department of Administration had not yet received the grant administrative paperwork from the federal Department of Commerce. Until all the paperwork is completed and submitted to the federal grant officials for final approval, some aspects of the project are on hold.

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Q: Why did DOA submit this application?

A: For over a year the BCN Advisory Council has encouraged DOA to work with the Wisconsin BadgerNet Access Alliance¹ (WBAA) on developing options to provide more bandwidth at lower costs. The ARRA broadband stimulus funding offered a timely opportunity to address both of these issues. Building a fiber infrastructure will help address the long-term needs of our schools and libraries for more bandwidth. The grant has also resulted in a review of ongoing BCN circuit costs and the costs for most bandwidths will be reduced. This cost reduction will then further leverage available TEACH funds allowing it to provide more bandwidth at less cost. From a broader perspective, as fiber is brought to a site it will likely help to bring high speed Internet access to nearby households and businesses too.

Q: How do I know if my school/library is part of this grant?

A: A list of schools and libraries is linked on the DPI's broadband website at <http://dpi.wi.gov/pld/arrabbfunding.html>. All schools in the grant have been contacted by DPI to confirm their participation. All libraries have been contacted by their regional library system to also confirm their participation. (For various reasons ten of the 467 sites in the initial grant have withdrawn from the project.)

Q: My school/library already has fiber and gets a TEACH discount. Will this grant be of any benefit to me?

A: Technically the 360 schools and libraries that already have fiber and get a TEACH discount are not part of the grant. However, these sites will definitely benefit from the reduction in bandwidth costs as addressed in the following question.

¹ The WBAA is a consortium of telecommunication carriers who have a contract with DOA to provide broadband connectivity and other services on the BadgerNet Converged Network.

Q: What will be the TEACH standard BCN bandwidths offered to schools and libraries?

A: As referenced in the first question above, the grant has resulted in reduced BadgerNet circuit costs allowing TEACH to offer more bandwidth at less cost. In brief, the following bandwidths and rates will apply to sites getting fiber from the grant and to those sites that already have it:

- All public libraries will get 20Mbps for \$100/month.
- All schools, CESAs, library systems and other institutions will get 100Mbps for \$250/month.

Q: We are concerned that the 100Mbps head-end circuit for our school/library WAN will not be enough bandwidth. Can we get more than 100Mbps? If so, how much will this cost?

A: Yes. Higher speeds are possible but costs for bandwidths above 100Mbps are currently under review.

Q: My school/library has fiber and gets a TEACH discount. When will it get the increased bandwidth? Will this happen automatically or will I have to apply to TEACH?

A: DOA is discussing the bandwidth upgrade timetable and process with WBAA. For example, some WBAA partners need to make infrastructure improvements in their service areas to accommodate the increased bandwidth. It is likely that some sites will see the increase this summer with most getting it by the fall. More information on the timing of the increase will be forthcoming. All sites will be informed when their bandwidth increase has been initiated. There will be no need to justify this bandwidth increase as is now required by the TEACH program and there is no need to apply to TEACH for the increase either.

Q: Will the increased BCN bandwidth increase my school/library's cost for Internet service?

A: Possibly. *Definitely check with your ISP on this issue.* Most Internet Service Providers (ISPs) factor in their cost for bandwidth, which is then included in what they charge a school/library. (WiscNet's cost is not based on bandwidth.) In January the DPI posted several emails to its technology lists encouraging schools and libraries to contact their ISP about possible costs increases based on the added BadgerNet bandwidth. The DPI emails also noted that some sites will likely need to purchase a new router to accommodate 20/100Mbps (see question immediately below). Schools and libraries were encouraged to include any Internet-related costs in their 2010 E-rate applications.

Q: Will I need to upgrade my school/library's network infrastructure to accommodate the increased bandwidth?

A: Possibly. This depends on several factors. For example, your current router may have a 100Mbps interface but its processing capacity (throughput) may be considerably less. If the router's throughput is greater than your school/library's peak usage, there is no need to replace it. (If your ISP owns the router contact them concerning any possible upgrade or replacement and who will pay for it.) There may also be other devices in your local network (e.g., firewalls, antivirus scanners, hubs/switches) that will need upgrading to accommodate the bandwidth increase. In brief, to take full advantage of the increased BCN bandwidth some schools/libraries may have to upgrade their network infrastructure and assume the costs for doing so. The state has contracts for LAN hardware/software but education discounts may be better than the state contract discounts.

Q: My school/library is now getting bandwidth from another (non-BCN) provider under a contract that expires later in 2010 (or 2011, 2012, etc). When the contract expires can I then get a BCN circuit at the above rate?

A: Yes, if your school or library meets two conditions: (1) The site qualifies for a TEACH discount, and (2) The site has fiber that can be used by a BCN provider.² If you now have fiber from a non-BCN provider you need to discuss this issue with your provider. If the fiber cannot be used your school or library can still join BadgerNet at a later date but it will have to pay the cost to bring BCN fiber into the building. If your bandwidth needs are not greater than about 10Mbps, the BCN service can likely be provisioned using a copper circuit thus bypassing fiber installation costs.

² Some schools and libraries were previously on the BCN and had a fiber connection. They then dropped BCN service for another provider. If a school or library elects to get back on the BCN, the BCN fiber can likely be used again but this will be determined on a site-by-site basis.

The questions below are targeted more to the schools and libraries getting fiber from the grant.

Q: What commitment does my school/library have as part of this grant?

A: A school or library that gets fiber from this grant has a commitment to stay with BadgerNet until 2015, unless it gets a better offer (e.g., more bandwidth at less cost) from another provider. Understandably, neither DOA nor the WBAA want to install fiber if a school/library will soon leave the network.

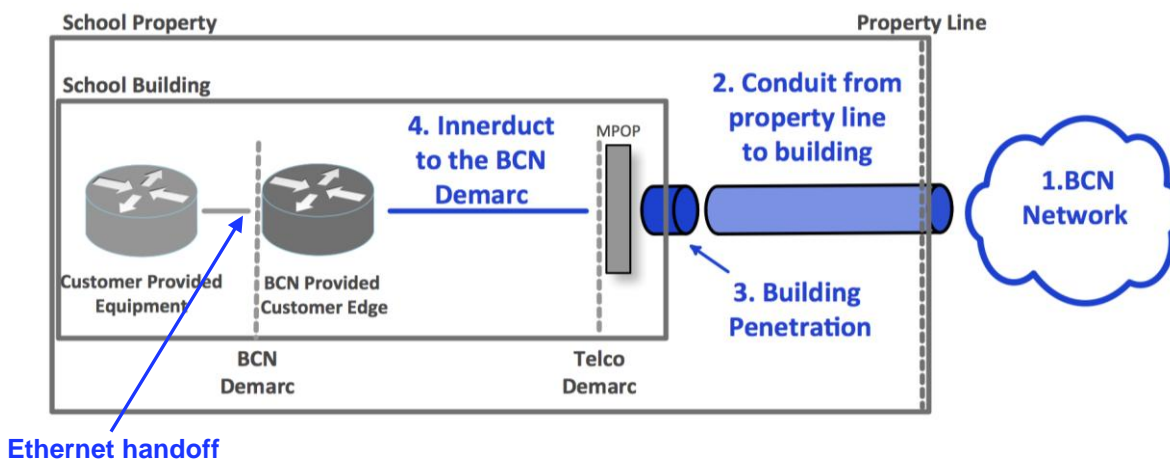
Q: What costs are covered by the grant?

A: Most of the costs covered by the grant are directly related to bringing fiber into the school or library building. (The average cost to bring fiber to a site is \$57,707.) Typical costs covered include the following (see schematic below):

1. Bringing fiber from the BCN network to the school/library's property line.
2. Extending fiber from the property line to the building.
3. Penetrating the school/library building.
4. Providing innerduct inside the building from the carrier's minimum point of penetration (MPOP) to the BadgerNet demarcation point and providing the BCN customer edge device.

The exact method of getting fiber into the building will vary. It might be done by trenching, directional core bore, or use of existing aerial service. For a great majority of sites the fiber will follow the same path as the existing copper circuit and use the same building penetration point. For example, if the copper circuit is buried then fiber will likely be buried next to it. (If buried, the grant will cover the cost of conduit in the ground.) If the current circuit is brought in via aerial (overhead) utilities, then the fiber will likely be provisioned in the same manner. Before any work is done all schools and libraries will have a site survey to ascertain local conditions and determine the exact method and path to bring fiber into the building. All sites will also get a site preparation guide which is now being developed.

Currently, the demarcation between the BCN provided customer edge device and the customer provided equipment (e.g., router) is an industry standard Ethernet handoff (see BCN demarc below). This will be the same with the fiber. Below is a schematic of fiber coming into a typical location.



The grant also has funding to provide routers to those sites that need one. Other BCN sites not in the grant may also need a router. For these sites, see the above question on Internet costs.

Q: What costs will my school/library be responsible for?

A: It is important to note that without a site survey it is not possible to know exactly how much it may cost each local site to provide any needed infrastructure improvements. As referenced in the above question, before any work is done all schools and libraries will get a site visit by a WBAA authorized representative to review local conditions. The results of the site survey will determine if a school/library will incur any

local costs. We do know for certain that the school/library is responsible for the network equipment room environmentals, such as power and HVAC. But this is not a new responsibility because all sites are already responsible for room environmentals for their current BCN copper circuit. For a great majority of sites there will be no changes needed to their current network room. The school or library will also be responsible for any increased Internet costs, ongoing router maintenance, and any needed LAN upgrade costs. These issues are addressed in a previous question.

Q: When will the fiber be installed?

A: It was initially expected that fiber installation would start in April. However, for various reasons—including the need to complete the federal grant paperwork that DOA has not yet received—the installation will likely not start until late May or June. Sites not completed by late fall (or when frost prevents trenching of fiber) will be done in spring and summer 2011. All sites will likely be done by August 2011 but many factors could cause this date to slip.

Q. Will we have any input on the installation date?

A: Yes. During the site visit, staff should definitely mention any date(s) to avoid. Yet, to keep within the grant's budget and to ensure optimal productivity, it will be necessary to have some flexibility on the date. For example, if a community has both a school and library getting fiber it makes sense to schedule these together.

"The compelling problem our project addresses is that the current physical (copper) infrastructure our schools and libraries now have limits their broadband connectivity. Simply stated: Fiber gets our schools and libraries to the future, faster." –From the grant's *Project Purpose*.

Q: How long does it take to install fiber?

A: For most locations fiber can be brought into the building with minimal disruption to daily operations. The actual fiber installation from the street into the building will usually be done in a day or two. The legacy copper circuit will continue to function while the fiber is being installed. To minimize any technical problems and down time, the actual cutover from the old copper circuit to the new fiber circuit will be closely coordinated between WBAA engineers and school/library technology staff. For most sites the actual cutover will be done in 5-10 minutes but all sites should plan for 2 hours of possible downtime.

Q: My library is in the same building with other municipal offices. Can our library's 20Mbps circuit be shared with other municipal offices?

A: Unfortunately not. Sharing of this type violates the federal E-rate program that TEACH applies for to help support the discounted BadgerNet circuit costs to the library (and schools). Municipalities can become BadgerNet customers and pay the non-TEACH discounted rate for whatever bandwidth is needed. As noted in the first question on page 1, rates for all BCN circuit speeds are now being reviewed.

Q: Because of past limits on TEACH subsidized bandwidth, our library's wireless Internet access is now through another local provider. With the added bandwidth can I have my wireless access use the BCN circuit so we don't have two Internet providers?

A: Yes. However in doing this there are network security issues and other factors that need to be addressed. Because libraries on BadgerNet are part of a larger library system WAN, you need to contact your system technology staff to discuss this issue.

Q: What role will the state's seventeen regional library systems have in this project?

A: The DPI library division staff will work closely with the system technology staff, DOA, and WBAA on coordinating various aspects of the project, including the site visits. Similar coordination was done for the last major BadgerNet upgrade in 2005-06. (The library systems all manage WANs and their member libraries' BCN circuits all connect to the WAN at the system headquarters.)

Q: Where can I get more information on the grant or this project?

A: Updates will be posted to DPI's K-12 and library email lists and to DPI's broadband website at <http://dpi.wi.gov/pld/arrabbfunding.html>. You may also contact Bob Bocher at DPI or Mike Mietz, DOA BadgerNet Manager, (608-264-9414; mike.mietz@wisconsin.gov). Questions on the TEACH program should be directed to Tara Baxter, TEACH Manager, (608-261-5054, teach@wisconsin.gov).